

## PATENT COOPERATION TREATY

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## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference HM 0036 PCT/Kr/H		<b>FOR FURTHER ACTION</b>		See Form PCT/IPEA/416
International application No. PCT/EP2004/006537		International filing date (day/month/year) 16.06.2004	Priority date (day/month/year) 18.06.2003	
International Patent Classification (IPC) or national classification and IPC B21C37/06, B21C37/09, B21C37/15, B23K35/30, F16L9/16				
Applicant HILLE & MÜLLER GMBH et al.				
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of    sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> sent to the applicant and to the International Bureau a total of    sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s))    , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>				
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I    Basis of the opinion</p> <p><input type="checkbox"/> Box No. II    Priority</p> <p><input type="checkbox"/> Box No. III    Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV    Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V    Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI    Certain documents cited</p> <p><input type="checkbox"/> Box No. VII    Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII    Certain observations on the international application</p>				
Date of submission of the demand  11.01.2005		Date of completion of this report  08.07.2005		
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized Officer  Gavriliu, A  Telephone No. +49 89 2399-		



**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/EP2004/006537

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**Box No. I Basis of the report**

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1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements\*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

**Description, Pages**

1-8 as originally filed

**Claims, Numbers**

1-22 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):
- \* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT  
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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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**1. Statement**

Novelty (N)	Yes: Claims	1-22
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-22
Industrial applicability (IA)	Yes: Claims	1-22
	No: Claims	

**2. Citations and explanations (Rule 70.7):**

**see separate sheet**

**Re Item V.**

**1. Cited documents**

The following documents are referred to in this communication:

D1 : US 5 553 640 A, cited by the Applicant

D2 : US 6 413 651 B1

**2. Clarity, conciseness and interpretation of the claims**

- 2.1 Although, claim 7 and claim 12 have been drafted as separate independent claims, they relate effectively to the same subject-matter i.e. a metal band or strip and they differ from each other only with regard to the definition of the subject-matter for which protection is sought and in respect of the terminology used for the features of that subject-matter. The aforementioned claims therefore lack conciseness and a lack of clarity as a whole arises (Art. 6 PCT).

Moreover, the terms "metal band" and "metal strip" encompass a similar scope and claims 12-16 contain the same features as claimed in claims 7-11. Therefore, claims 12-16 are considered as being redundant.

The Applicant is therefore kindly asked to make this set of claims clear and concise.

- 2.2 The term "preferably", used in the wording of claims 5, 8-11, 13-16, 18-19, and 21 introduces optional features and does not limit the scope of these claims. Thus, the features following such term are regarded as entirely optional.

This is also the case for the term "for instance for producing double walled metal tubes" used in the wording of claims 7 and 12 that introduces an intended use for the claimed metal band/strip that does not limit the scope of these claims.

**3. Inventive Step**

**3.1 Independent claim 1**

The closest prior art is considered to result from D1 that discloses a multi-layer metal tube comprised of a flat steel band having a brazing layer connected to at least one side of the said steel band, wherein the brazed layer consists of a Cu-Sn

alloy. The tube is produced by deforming the flat steel band into a tubular shape by winding or cylindrically rolling and by subsequently soldering the steel band to form a multi-layer metal tube. The Cu-Sn alloy brazed layer contains Sn in the range of 13-15 wt % (col. 2, lines 30-67; col.3, line 52-col.4, line 33; claim 1).

The present claim 1 departs from the disclosure of D1 by the following distinguishing feature:

- a lower Sn content in the Cu-alloy brazing layer, specifically in the range of 3-12 wt%

This distinguishing feature leads to a brazing Cu-alloy having a lower melting temperature and thus, a lower brazing temperature that makes process of the soldering of the metal surfaces more efficient and rapid. Moreover, the presence of Sn in the claimed range imparts a higher strength to the brazing seam between the walls of the tube.

The technical problem to be solved by the present application was therefore to reduce the brazing temperature the brazing Cu-alloy of D1 as well as to increase the strength of the brazing layer.

The person skilled in the art would turn to document D2 for the solution of this particular problem as it deals with a method of producing composite metal coils or plates like D1 and present application. The composite metal coils comprises one parent metal coil, at least one clad metal coil and an inter-layer in between said metal coils that are heated, hot-rolled and thus, soldered together. The inter-layer is composed of a brazing filler Cu-alloy having a Sn content in the range of 3-10 wt% (col.3, lines 24-66; col.5, lines 8-36; claims 1 and 4).

Embodiments 2 and 3 in Table 1 of D2 show brazing filler Cu-alloys containing 9% Sn and 5 % Sn, respectively. All these values fall within the claimed range of Sn content in the Cu brazing layer of claim 1 of the present application.

Moreover, it is there disclosed that the addition of Sn, in range of 3-10 wt%, decreases the melting point of the brazing filler and improves the strength of the interfaces (column 5, lines 30-37).

Therefore there is a clear pointer in D2 to decrease the Sn content to 3-10 wt% in

the brazing Cu-alloy used in soldering of two metal coils in order to solve the above mentioned technical problem. The application of this teaching to the Cu-Sn brazing alloy disclosed by D1 is obvious and leads to the claimed subject-matter.

Consequently, the subject-matter of claim 1 is not inventive in view of the obvious combination of D1 and D2 (Art. 33(3) PCT).

### 3.2 Independent claims 7 and 12

As already explained above on paragraph 2.1, these claims relate to the same subject-matter i.e metal band or strip.

The closest prior art is considered to result also from D1.

These claims depart from the disclosure of D1 by the following distinguishing features:

- a width of the metal band of 20-80 mm (claim 7);
- a lower Sn content in the Cu-alloy brazing layer, specifically in the range of 3-12 wt% (claims 7 and 12).

The claimed width of the metal band is seen as common practice in this technical field. Moreover, no technical effect can be associated to this distinguishing feature. A feature having no discernable technical effect cannot justify an inventive step.

The lower Sn content in the Cu-alloy brazing layer cannot be considered as having an inventive step as explained above on paragraph 3.1.

It is considered therefore, that the subject-matter of claims 7 and 12 does not involve an inventive step (Art. 33(3) PCT).

### 3.3 Independent claim 17- method claim

The closest prior art is considered to result also from D1 that discloses a method of coating a metal strip comprising the following steps (col.3, lines 15-44):

- cleaning the metal strip by electrolytically degreasing;
- activating the surface of the metal strip by pre-treating in an activating bath;
- coating the strip with a copper-tin alloy
- post-treating the metal strip i.e by applying an aluminium containing corrosion-preventing coating

The present claim 17 departs from the disclosure of D1 by the following distinguishing feature:

- a lower Sn content in the Cu-alloy coating layer, specifically in the range of 3-12 wt%

From the same reasoning as explained above on paragraph 3.1 the subject-matter of claim 17 cannot be regarded as involving an inventive step in view of the obvious combination of D1 and D2 (Art. 33(3) PCT).

**3.4 Dependent claims 2-6, 8-11, 13-16 and 18-22.**

Dependent claims 2-6, 8-11, 13-16 and 18-22 do not contain any additional features which, in combination with the features of claims 1, 7, 12 and 17 respectively to which they refer, meet the requirements of the PCT with respect to inventive step, the reasons being that their additional features are known from the disclosure of D1 and/or D2 or from the common knowledge in the art (Art. 33(3) PCT).